**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

CIRBA INC. (d/b/a DENSIFY) and CIRBA IP, INC.,	Civil Action No.
Plaintiffs,	
v.	**JURY TRIAL DEMANDED**
VMWARE, INC.,	
Defendant.	

COMPLAINT

Plaintiffs Cirba, Inc. (d/b/a Densify) and Cirba IP, Inc. (collectively, "Densify") file this Complaint against Defendant VMware, Inc. ("VMware"), and respectfully allege as follows:

NATURE OF THE ACTION

1.   Densify is a quintessential start-up success story. Through innovation and years of hard work, Densify has earned recognition for having set the standard in the industry for cloud and virtual infrastructure optimization. Global 5000 organizations use Densify's software to reduce costs, operate with less infrastructure, and achieve better application performance.

2.   Densify is an industry leader. For the past decade, Densify has won praise as a "Best Cloud Management Solution of the Year," "EMA Top 3," "Leader in Cloud Cost Monitoring," "Best of VMworld 2017 Gold Winner," "Top 10 Cloud Solution Provider," "Editors' Choice," "Hot Product," "Vendor to Watch," "Companies to Watch," "Top 10 Virtualization Vendors to Watch," "Cool Vendor," among other recognitions.

3.   For years, Densify's products have led the industry in optimization, competing effectively based on its innovations and foundational patent protection. Its products have saved

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customers millions of dollars in hardware and software licensing costs, increasing efficiency and decreasing risk.

4.   Densify's technology offerings were so compelling that VMware took Densify's ideas and intellectual property, brazenly infringing the patents with products that worked the same way, looked strikingly similar, and even were advertised using the "Densify" trademarks.

5.   Rather than innovating on its own, VMware has systematically copied Densify's technology. VMware has used Densify's technology as a blueprint to close in on Densify's lead as one of the best optimization solutions in the market. VMware's infringement has gradually increased over time, copying more and more of the features of Densify's product—the most significant to date being the recent releases of its flagship product, vROps, and its movement into the hybrid cloud space. With these recent developments, VMware is imminently threatening Densify's virtual infrastructure optimization IP, and VMware recently has indicated it intends to leverage its infringing technology to move into Densify's cloud infrastructure optimization business.

6.   Densify has no recourse but to file this action to stop VMware's misuse of its intellectual property. Densify has invested years and millions of dollars to develop and commercialize products embodying its intellectual property. VMware is a multi-billion dollar global player that dominates the virtual infrastructure market; 99% of *Fortune 1000* companies reportedly are VMware customers. If VMware's unauthorized use of Densify's intellectual property is not stopped, VMware can use its market power and dominant position to outspend Densify and swamp Densify's marketing and sales of products embodying Densify's patented technology. Densify cannot fairly compete against a behemoth like VMware unless its intellectual property is respected.

7.   Densify, which has not licensed its patents to competitors, has chosen to compete in the marketplace and is entitled to do so based on the exclusivity afforded by its patents. The disclosure of innovation in patents is not intended to facilitate unauthorized use, but rather to incentivize public disclosure for the benefit of all, in return for the promise to inventors of exclusive rights for a limited period of time. Meaningful consequences are needed to protect Densify's exclusive rights.

8.   In the end, this case is about ensuring a level playing field so smaller competitors like Densify can compete fairly based on their hard work and protected innovations against larger companies like VMware.

9.   Accordingly, Densify brings this action under the patent laws, 35 U.S.C. § 1 *et seq.*, the Trademark Act of 1946 (the Lanham Act), 15 U.S.C. § 1051 *et seq.*, Delaware law, and common law. Densify seeks to stop VMware's infringement of its patents and other intellectual property so that it may compete on the strength of the breakthrough products it worked so hard to create.

THE PARTIES

10.   Cirba, Inc. (d/b/a Densify) is a Canadian privately-owned corporation headquartered in Markham, Ontario. Densify's principal place of business is located at 400 – 179 Enterprise Boulevard Markham, Ontario L6G 0E7 Canada. In addition to Markham, Densify has operations in New York, London, and Melbourne. Cirba, Inc. is the exclusive licensee of the patents asserted in this case.

11.   Cirba IP, Inc. is Canadian privately-owned corporation headquartered in Markham, Ontario. Cirba IP is located at 400 – 179 Enterprise Boulevard Markham, Ontario L6G 0E7 Canada. Cirba IP, Inc. is a wholly-owned subsidiary of Cirba, Inc. Cirba IP, Inc. owns all right,

title, and interest in and to the patents asserted in this case, and has exclusively licensed them to

Cirba, Inc.

12.   VMware, Inc. is a publicly traded corporation organized and existing under the laws

of the State of Delaware. VMware's headquarters are located at 3401 Hillview Ave, Palo Alto,

California. VMware also has offices in Colorado, Georgia, Massachusetts, Texas, Virginia, and

Washington, among other offices located in twenty countries around the world.

JURISDICTION AND VENUE

13.   This is a civil action asserting claims of patent infringement of U.S. Patent Nos.

8,209,687 ("the '687 patent") and 9,654,367 ("the '367 patent") (collectively, the "Asserted

Patents"), unfair competition under the Lanham Act, 15 U.S.C. § 1125(a), deceptive trade practices

under Delaware Code Title 6 § 2532, and common law trademark infringement.

14.   This Court has subject matter jurisdiction over this case under 28 U.S.C. §§ 1331

and 1338, 15 U.S.C. § 1121, and 28 U.S.C. § 1367(a).

15.   Venue is proper in this Court under 28 U.S.C. §§ 1391 and 1400(b). VMware has

offered and sold and continues to offer and sell its infringing products and services in this district.

On information and belief, VMware sells and offers to sell the infringing products and services to

developers, partners, or customers in this district, such as the University of Delaware, ADP,

Alliant, Rent-a-Center, Cardinal Health, and the Make-A-Wish Foundation of America. VMware

has committed acts of patent infringement in this district, is incorporated in this district, and does

business in this district.

16.   This Court has personal jurisdiction over VMware. VMware is incorporated in

Delaware and has purposely availed itself of the privileges and benefits of the laws of the State of

Delaware. VMware has continuous and systematic business contacts with the State of Delaware.

VMware, directly and/or through subsidiaries or intermediaries, conducts its business extensively

throughout Delaware, by shipping, distributing, offering for sale, selling, and advertising its products and services in the State of Delaware and in this district. VMware, directly and/or through subsidiaries or intermediaries, has purposefully and voluntarily placed its infringing products and services into this district and into the stream of commerce with the intention and expectation that they will be purchased and used by consumers in this district.

BACKGROUND

A.   Densify And Its Technology

17.   Densify was founded in 1999. It is a software company that provides machine learning analytics products related to on-premise information technology ("IT") infrastructure and the public cloud. It is a company built on innovation of products that save its customers millions of dollars in software licensing and computing infrastructure costs by making their utilization of servers more efficient. Densify has grown to over 180 employees and counts among its customers many of the world's most prominent and sophisticated companies. Densify has been recognized for its innovations; it has won numerous industry awards and has been granted patents on its technology by the U.S. Patent and Trademark Office ("PTO"). These accomplishments have attracted significant investment in Densify, which is used to innovate new products that make its customers' businesses run more efficiently, reliably, and profitably.

18.   Many companies deploy their own IT infrastructure, including computing, storage and networking equipment, on premises. Generally, computing environments are designed to run at least one workload that performs business functions and consumes compute resources, e.g., resources related to central processing units ("CPUs"), memory, disk, network, and other hardware. The workloads run on computing systems such as servers that supply the computing resources. Each computing system has a finite capacity of resources.

19.   Depending on the size of the company, the amount of equipment and, importantly, the number of physical servers that companies deploy can be substantial, which is necessary in order to keep pace with today's high processing demands. There are inefficiencies associated with these large infrastructure environments, requiring IT organizations to manage large numbers of physical servers, each operating only at a fraction of their capacity.

20.   Enter virtualization. In computing, "virtualization" refers to the act of creating a "virtual" version of something.   Virtualization relies on software to simulate hardware functionality and create a virtual computer system, which allows companies to run more than one virtual computer system, or virtual machine ("VM"), on a single physical server. In other words, virtualization offers greater efficiency and economies of scale.

21.   In computing, a virtual machine or VM is essentially an emulation of a computer system. It functions as and represents a real computer machine but does so only logically as defined by software (virtualization software is referred to as a "hypervisor"). VMs originated from the desire to run multiple operating systems on the same piece of hardware and get the benefit of sharing computing resources. VMs are used to run software applications, and with virtualization, one physical server can run many applications as each application runs in a VM sharing the resources of the physical machine. Different application needs on the same physical hardware can create conflicts in complex systems—each piece of software competing for limited processing and storage capabilities of a physical server. Simplified, VMs allow time and capacity sharing among competing applications and their operating systems. If one physical machine can host multiple VMs, the utilization of its resource capacity becomes more efficient, and requires fewer physical resources, and software licenses, and hence costs less.

22.   In virtualized environments, the physical server and related software often are called a "host." VMs running on a host often are called "guests." Virtualization is accomplished through software that makes logical computing environments independent of physical infrastructure. In this context, virtualization refers to dividing up resources of a host into multiple VMs (i.e., multiple virtual servers). With virtualization, one host can run many applications because each run on a VM sharing resources of the host.

23.   Virtualization also allows for multiple hosts to be configured as one larger logical entity; the resulting group of hosts can be referred to as a "cluster." A cluster offers an advantage of managing several hosts as one larger resource pool. Each host can be interchangeable in the pool, which enables VMs to move between them. The moves could happen, for example, if a host becomes too busy and another has more available resources.

24.   Decisions must be made regarding which VMs to run on which hosts. Running too few VMs or applications on a host means that more servers or capacity must be purchased. Running too many VMs or applications can create risk by over-utilizing hardware, i.e., it creates resource contention where VMs compete for the same resources. The inefficiencies and risks can be reduced by optimizing workload placements and making sure the amount of resources assigned to each VM is commensurate with host constraints.
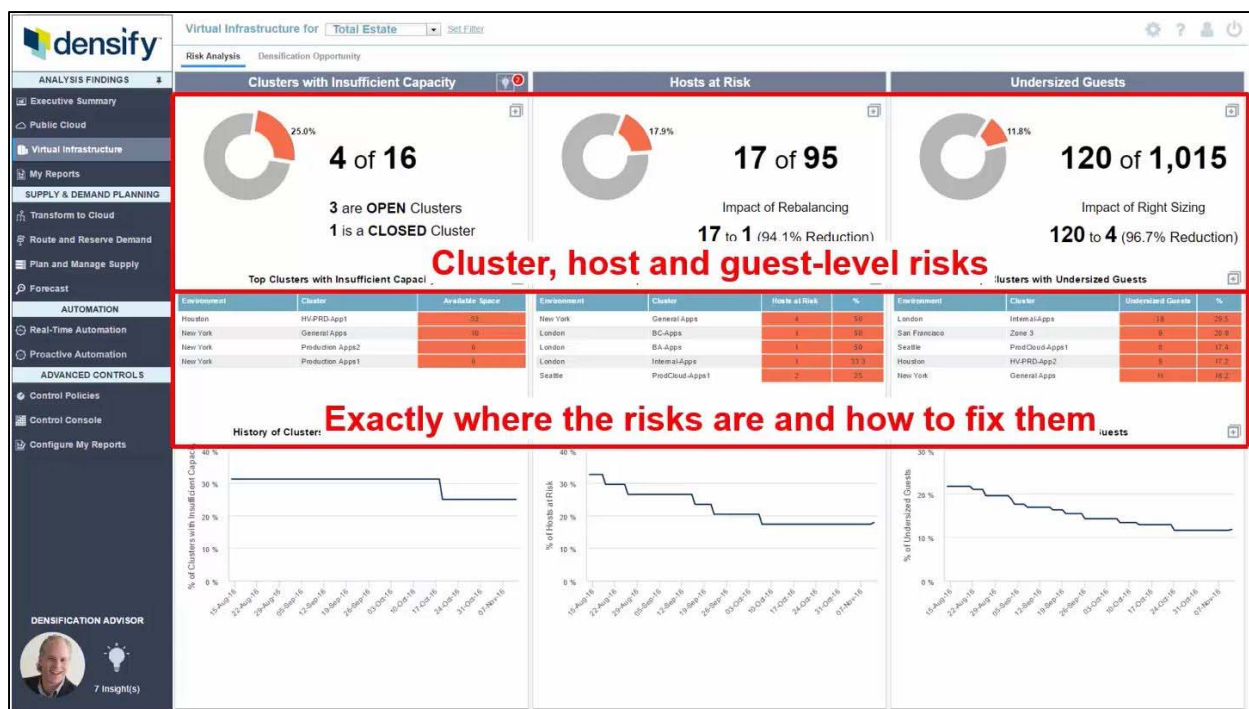
25.   Even with promise of greater efficiency and scale, companies were not able to optimize a complex virtualized infrastructure on a day-to-day basis. For example, in virtualized environments, determining optimal placements of VMs in short times, while honoring complex operating constraints, was not practical.

26.   Densify's technology addresses these needs. With Densify's analytics, managing virtualized infrastructures to an optimal state can be done with automation. In fact, intelligent automation has become critical as environments scale and become more complex.

27.   Densify enables automated infrastructure optimization for virtualized environments through its proprietary software. Densify offers products that optimize virtual environments and are referred to herein as "Densify's Optimization Engine." Densify's Optimization Engine is predictive analytics software that optimizes public cloud, bare metal cloud, and on-premise virtualized environments, enabling customers to operate with less cloud cost, less infrastructure and better performing applications.
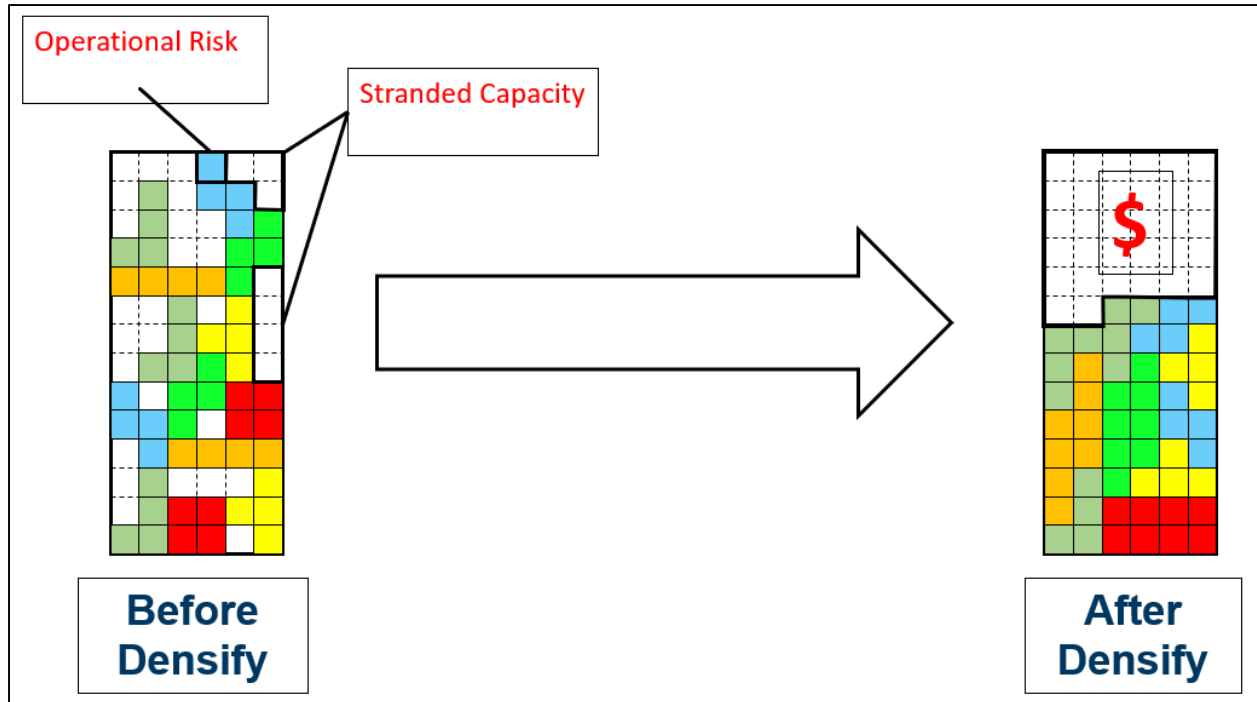
28.   Densify's Optimization Engine decreases risk in a VM infrastructure. Its predictive analytics anticipate capacity risk, place workloads, and allocate resources to avoid capacity shortfalls, meet compliance and other key operating policies, which results in reducing unnecessary movement of VMs and avoiding application performance issues. The figure below is an example of how Densify's Optimization Engine displays risks in a customer's environment across clusters, hosts, and guests.[1] The display shows, for example, how: (1) specific placement and allocation recommendations can address risks; (2) the customer can automate and execute those recommendations; and (3) to track the progress over time.

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[1]   Screenshot from Densify Video, Cloud Optimization Done For You, available at https://www.densify.com/resources/video-optimize-on-premises-virtual-infrastructure-bare-metal-cloud (Ex. 1). A full version of the video from which the screenshot (Ex. 1) was taken has been provided as Ex. 31.
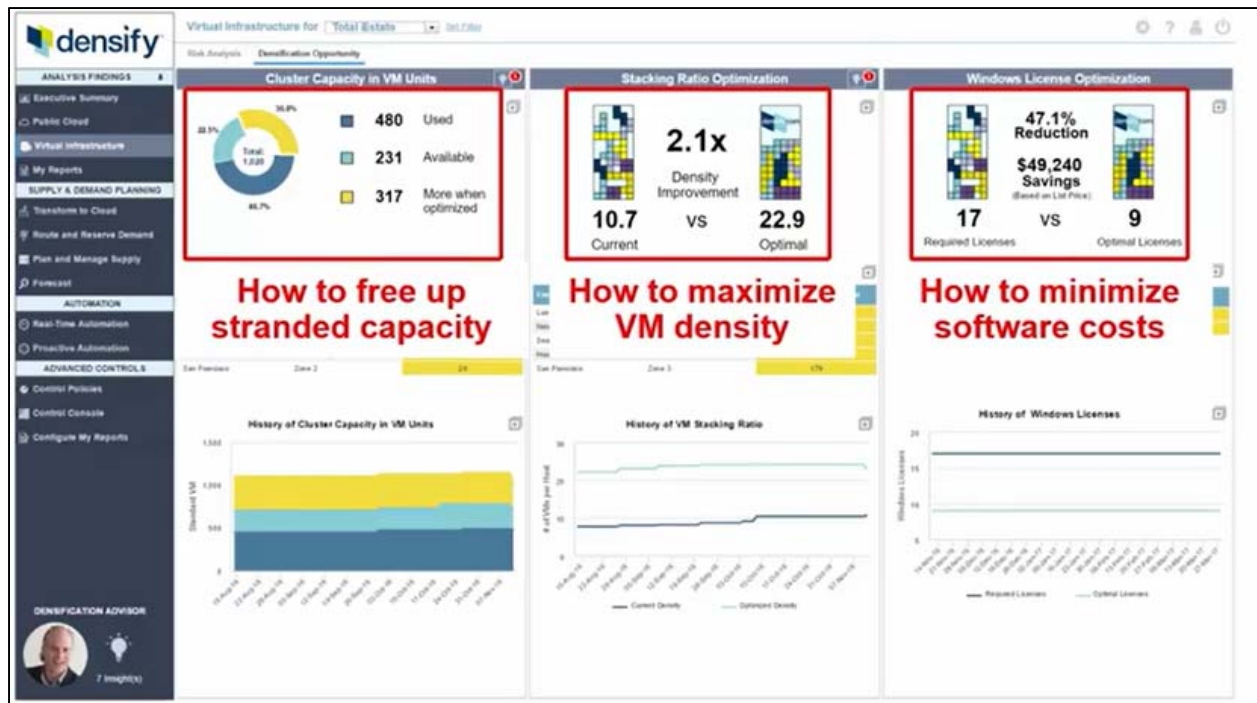
29.   The Densify Optimization Engine reduces infrastructure costs. Its intelligent workload stacking and resource allocation increases optimization by identifying savings of an average of 33% on hardware and 55% on software licensing. The picture below illustrates, by way of analogy, the effect of inefficient stacking, creating operational risk and stranded capacity, and then how Densify's Optimization Engine organizes the workload to reduce risks and inefficiencies.[2]

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[2]   Screenshot from Densify Video, Cloud Optimization Done For You, available at https://www.densify.com/resources/video-optimize-on-premises-virtual-infrastructure-bare-metal-cloud (Ex. 2). A full version of the video from which the screenshot (Ex. 2) was taken has been provided as Ex. 31.

30.   Densify's Optimization Engine automates workload placement and resource optimization. The figure below illustrates how Densify's Optimization Engine provides customer control over making stranded capacity available, how to increase the density of VMs, and how to minimize software costs.[3]

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[3]   Screenshot from Densify Video, Cloud Optimization Done For You, available at https://www.densify.com/resources/video-optimize-on-premises-virtual-infrastructure-bare-metal-cloud (Ex. 3). A full version of the video from which the screenshot (Ex. 3) was taken has been provided as Ex. 31.

31.   Through its innovative product offerings, Densify has attracted a substantial customer following among the *Fortune 5000*. Customers pay millions of dollars for Densify's Optimization Engine, which in turn save those companies many more millions of dollars. Densify has invested heavily in research and development to create innovative, award winning products that have been in high demand from some of the world's leading companies.

B.   VMware And Its Technology

32.   VMware is a company focused on platform virtualization and cloud computing software and services. Founded in 1998, it entered the server market in 2001. It began as a leader in virtualization software and has expanded its offerings over the years. It is known for its innovation of the hypervisor—the layer of software residing between the operating system and the system hardware that enables virtualization.

33.   VMware's early success was grounded in its innovations relating to server virtualization. But, as analysts have recognized, it has been hesitant to embrace new technologies:

"The history of VMware presents a company that disrupted the IT industry with server virtualization, but that was hesitant to embrace new technologies, such as the public cloud. VMware's future success will depend on how it finds a role in the current cloud market and how it approaches containers."[4]

34.   "The concept of virtualization has moved from the server to other areas in the data center infrastructure. The history of VMware shows a company trying to keep up with its original innovation."[5]   Over time, VMware has been successful in raising money, with which it acquired companies with innovative technology and developed products using the technology of others.

35.   In 2008, "after a disappointing financial performance due to mismanagement of the company's growing scale, the board of directors replaced VMware president and CEO Diane Greene with Paul Maritz, a former Microsoft veteran who headed EMC's cloud computing business unit. This leadership reorganization marked a point in the history of VMware that foreshadowed a shift in the company's direction."[6]

36.   Thereafter, VMware began rapidly acquiring innovations from other companies, and, at least in the case of Densify, copying a competitor's technology.   The history shows VMware has been taking an increasingly aggressive approach in maintaining its market power as the market shifts and new innovators spring up.

37.   Today, VMware faces challenges in adapting its business to the public cloud as companies shift away from on premise to cloud-based infrastructures.   "VMware Cloud on AWS isn't as attractive for organizations developing new applications. VMware maintains its position

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[4]   Korzeniowski, P., "What The History Of VMware Reveals About Its Future Projects," available at https://searchvmware.techtarget.com/tip/What-the-history-of-VMware-reveals-about-its-future-projects (Ex. 4).

[5]   *Id.* (Korzeniowski, Ex. 4).

[6]   *Id.* (Korzeniowski, Ex. 4).

with data center technicians, but it's not growing with business unit developers who increasingly control significant portions of IT spending. . . . VMware's virtualization software reshaped the computer industry. Cloud and containers are now having a similar effect. VMware's response to these trends will determine its impact in the coming years."[7]

38.   This case centers on VMware's products and services related to its virtualization platform, including but not limited to, vRealize Operations ("vROps"), Distributed Resource Scheduler ("DRS"), and other related products and services, including VMware's suite of software products and services that include vROps or DRS (collectively, the "VMware Accused Products").

39.   According to VMware, vROps is an enterprise software product that "can proactively identify and solve emerging issues with predictive analysis and smart alerts, ensuring optimal performance and availability of system resources - across physical, virtual, and cloud infrastructures."[8] VMware states that vROps provides "complete monitoring capability in one place, across applications, storage, and network devices, with an open and extensible platform supported by third-party management packs."[9] In addition, according to VMware, vROps "increases efficiency by streamlining key processes with preinstalled and customizable policies while retaining full control."[10] Using data collected from system resources (objects), vROps "identifies issues in any monitored system component, often before the customer notices a problem."[11]

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[7]   *Supra* n. 4 (Korzeniowski, Ex. 4).

[8]   vRealize Operations Manager 7.0 Help Guide at 5 (Nov. 15, 2018), available at https://docs.vmware.com/en/vRealize-Operations-Manager/7.0/vrealize-operations-manager-70-help.pdf (Ex. 5).

[9]   *Id*. (vRealize Operations Manager 7.0 Help Guide, Ex. 5).

[10]   *Id*. (vRealize Operations Manager 7.0 Help Guide, Ex. 5).

[11]   *Id*. (vRealize Operations Manager 7.0 Help Guide, Ex. 5).

40.   VMware's core hypervisor is referred to as ESXi. VMware's DRS is a tool for managing VM workloads and "works on a cluster of ESXi hosts and provides resource management capabilities like load balancing and virtual machine (VM) placement. DRS also enforces user-defined resource allocation policies at the cluster level, while working with system-level constraints."[12] VMware states that DRS ensures that "VMs and their applications are always getting the compute resources that they need to run efficiently."[13]

C.   Densify and VMware's Relationship

41.   Densify's business historically has focused on technology that can optimize the placement of virtual machines on hosts while under the multiple operational constraints. It works with virtualization platforms offered by, among others, VMware. Densify's Optimization Engine historically has complemented VMware's products, but as VMware learned Densify's technology, it slowly over the years has become Densify's competitor in virtual infrastructure optimization.

42.   IT organizations of major companies typically utilize virtual environments, and most of these companies use VMware's virtualization platform (i.e., hypervisor and related software).

43.   Densify integrates with VMware's virtualization platform, including working with VMware management products like DRS and vROps.

44.   Because VMware offers the baseline virtualization platform with approximately 99% of *Fortune 1000* companies as customers, it is naturally the dominant "incumbent" with direct access to customers. VMware uses its incumbent position and market dominance to consolidate

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[12]   Understanding vSphere DRS Performance, VMware vSphere 6 at 4, available at, https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/techpaper/vsphere6-drs-perf.pdf (Ex. 6).

[13]   *Id.* (Understanding vSphere DRS Performance, Ex. 6).

its power, particularly when it comes to competitors. For example, on information and belief,

VMware controls access to the industry's leading tradeshow (called "VMworld"), including

speaker and analyst invitations. By doing so, VMware is capable of controlling the agenda for

what is known to be a must-attend virtualization tradeshow.

D.   VMware Copied Densify's Technology

45.   VMware has long been familiar with Densify's product, technology and inventions.

VMware embarked on a strategy to introduce products with Densify's technology and intellectual

property.

46.   As an example, VMware previewed its release of vROps 6.1 at the VMworld 2015

trade show. vROps 6.1 was shown with the following dashboard:[14]

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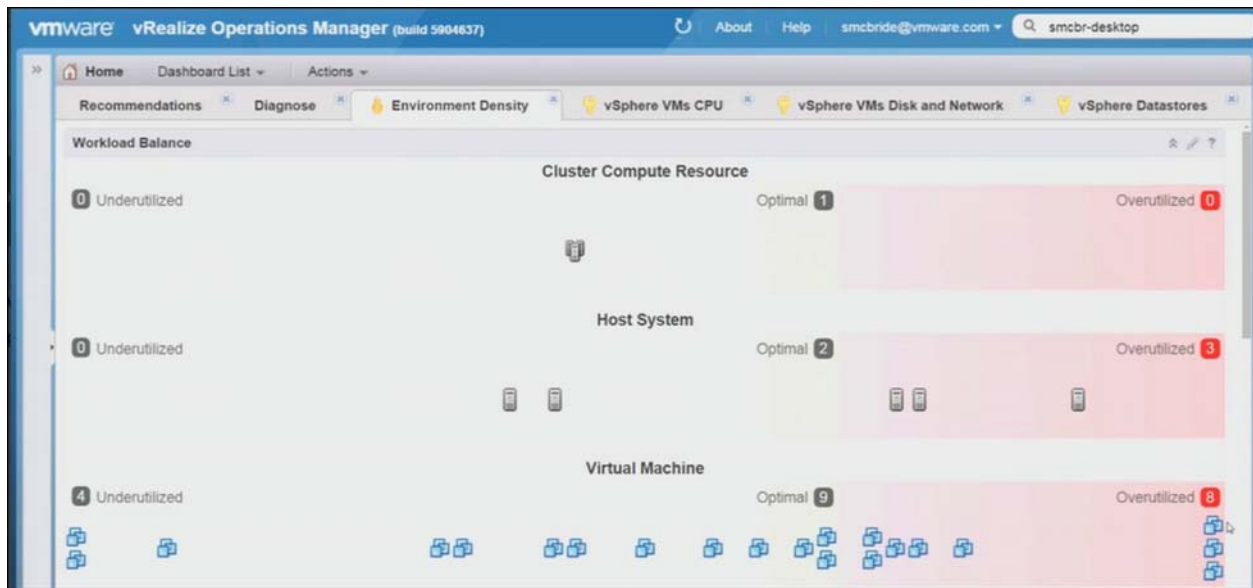
[14]   Screenshot from VMware Videos, How to Troubleshoot Using vRealize Operations
Manager (Deep Live Demo) (MGT4928-1) and How to Troubleshoot Using vRealize Operations
Manager   (Deep   Live   Demo)   (MGT4928-2),   available   at
https://videos.vmworld.com/global/2015?q=MGT4928 (Ex. 7). Full versions of the videos from
which the screenshot (Ex. 7) was taken have been provided as Exs. 32 – 33.

47.   vROps' dashboard looked the same in relevant respects as Densify's product that was in the market since 2012, shown below.[15] In fact, an audience member spoke up during the VMworld conference presentation to note how similar vROps dashboard was.

Screenshot of Densify's Product

48.   As seen above, Densify's product and VMware's vROps 6.1's dashboard share substantially the same key features (e.g., "too little infrastructure" is analogous to "overutilized"). The similarity of VMware's dashboard to Densify's was so striking that Densify received a call from a customer who mistakenly assumed VMware must have acquired Densify.

49.   Upon information and belief, the dashboard in paragraph 47 remains a vROps feature.

50.   VMware also released "predictive DRS" that was in material respects the same as a core Densify feature that VMware knew about and copied.

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[15]   Screenshot of Densify's Product (Ex. 8).

51.   These releases were troublesome and infringing, but still VMware was not able to offer a product, like Densify's, that satisfied the needs of customers with complex business and operating constraints.

52.   Then, in late September 2018, VMware released vROps version 7.0. vROps 7.0 added the "Automated Host Based Placement" feature, which allows vROps to "teach DRS your business intent and control not only balancing across clusters, but also which host within a cluster the workload will land on."[16] The particular use case for this feature is software license control[17]— a key Densify product feature known to VMware.

53.   Upon information and belief, prior to the vROps 7.0 release, vROps did not have a host-based software license control feature. With the "Automated Host Based Placement" feature, however, VMware, for the first time, provides a commercially viable host-based software license control feature that allows a customer to "automatically drive" its "business intent" from a single and automated user interface enabling the type of software license control feature Densify described as important to its customers. VMware has not stopped there. In a recent announcement, VMware has emphasized that it is further enhancing the vROps host-based placement software license control features in a brand new vROps 7.5 release.

54.   Not only did VMware copy Densify's technology, it even began using its name and trademark DENSIFY (or formatives thereof) in reference to VMware's products. For example, it

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[16]   Gandhi, T., What's New in vRealize Operations 7.0, VMware Blogs, available at https://blogs.vmware.com/management/2018/08/whats-new-in-vrealize-operations-7-0.html (Ex. 9).

[17]   Dias, J., Using Host Rules with Business Intent in vRealize Operations 7.0, VMware Blogs, available at https://blogs.vmware.com/management/2018/11/using-host-rules-with-business-intent-in-vrealize-operations-7-0.html (Ex. 10).

began identifying its key feature as "Workload Optimization – Densifying to Repurpose Hosts."

An example is below:[18]
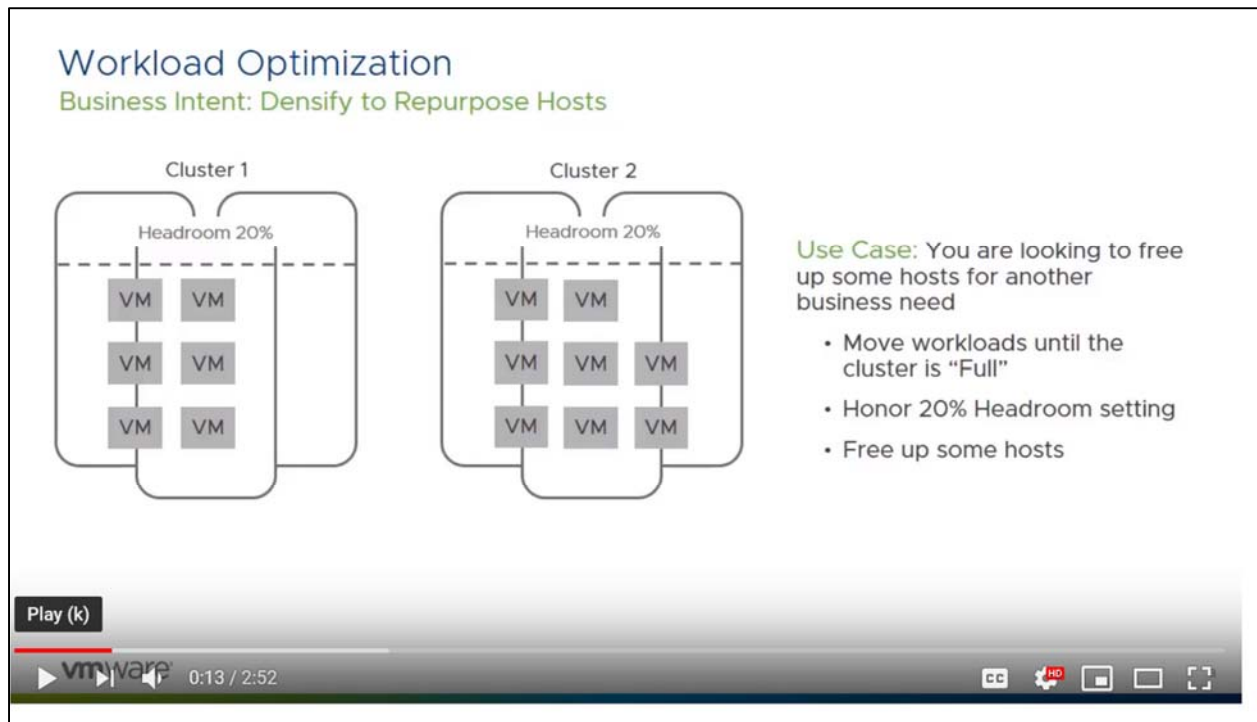
E.   VMware's Infringement of Densify's Intellectual Property

55.   VMware implemented features in VMware products that infringed Densify's

patents.

1.   The '687 Patent

56.   On June 26, 2012, the U.S. Patent and Trademark Office duly and legally issued

the '687 patent, entitled "Method and System for Evaluating Virtualized Environments," with Tom

Silangan Yuyitung and Andrew Derek Hillier as inventors. The earliest application related to the

'687 patent was filed on August 31, 2007. A true and correct copy of the '687 patent is attached

as Exhibit 12.

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[18]   Screenshot from Workload Optimization - Densifying to Repurpose Hosts, VMware Cloud
Management, available at https://www.youtube.com/watch?v=IymKQdg3oNE (Ex. 11). A full
version of the video from which the screenshot (Ex. 11) was taken has been provided as Ex. 34.

57.   The '687 patent is directed to technological solutions that addresses problems specifically grounded in enterprise IT environments. For example, the '687 patent explains that "IT infrastructures used by many organizations have moved away from reliance on centralized computing power and towards more robust and efficient distributed systems. While the benefits of a distributed approach are numerous and well understood, there has arisen significant practical challenges in managing such systems for optimizing efficiency and to avoid redundancies and/or under-utilized hardware. In particular, one challenge occurs due to the sprawl that can occur over time as applications and servers proliferate. Decentralized control and decision making around capacity, the provisioning of new applications and hardware, and the perception that the cost of adding server hardware is generally inexpensive, have created environments with far more processing capacity than is required by the organization."[19]

58.   The '687 patent also states that "[w]hen cost is considered on a server-by-server basis, the additional cost of having underutilized servers is often not deemed to be troubling. However, when multiple servers in a large computing environment are underutilized, having too many servers can become a burden. Moreover, the additional hardware requires separate maintenance considerations; separate upgrades and requires the incidental attention that should instead be optimized to be more cost effective for the organization. Heat production and power consumption can also be a concern. Even considering only the cost of having redundant licenses, removing even a modest number of servers from a large computing environment can save a significant amount of cost on a yearly basis."[20]

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[19]   '687 patent, 1:26-41.

[20]   '687 patent, 1:42-54.

59.   The emergence of virtual infrastructure provided a technology foundation to achieve consolidation, and according to the '687 patent, "organizations have become increasingly concerned with such redundancies and how they can best achieve consolidation of capacity to reduce operating costs."[21]   The problems IT organization faced at the time were that "[c]omplex systems configurations, diverse business requirements, dynamic workloads and the heterogeneous nature of distributed systems can cause incompatibilities between systems.   These incompatibilities limit the combinations of systems that can be consolidated successfully.   In enterprise computing environments, the virtually infinite number of possible consolidation permutations which include suboptimal and incompatibility system combinations make choosing appropriate consolidation solutions difficult, error-prone, and time consuming."[22]

60.   The '687 patent addresses these technological problems not by a mere nominal application of a generic computer to practice the invention, but by "recogniz[ing] that virtualization often involves more than considering sizing, for example, it is beneficial to understand all the constraints that govern and impact a target environment and ensure that these constraints are taken into account when planning and managing a virtual environment. This has been found to be particularly true of virtualization infrastructures such as VMware Infrastructure®, where sophisticated features such as vMotion, distributed resource scheduling (DRS) and HA require careful planning and diligent administration of virtual environments. It has been found that to fully realize the capabilities of the virtualization infrastructure, the virtualization scheme being used should be combined with accurate intelligence and focused analytics in order to safely and effectively transform existing systems into a new virtual paradigm.   In order to provide such

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[21]   '687 patent, 1:55-57.

[22]   '687 patent, 2:12-21.

intelligence and focused analytics, an analysis program for determining compatibilities in a computing environment . . . can be utilized along with specific virtualization rule sets and user interfaces (UIs) to address the considerations of a virtualization infrastructure."[23]

61.   Specifically, the '687 patent recites "evaluating the placement of said virtual machines in said virtualized environment using said data sets by evaluating each virtual guest against each virtual host and other virtual guests using one or more rule sets pertaining to said technical, business and workload constraints to determine guest-host placement."[24] As such, the "intelligence and focused analytics" the '687 patent is directed to provide a specific improvement over prior systems that is not well-known or conventional, resulting in an improved automated evaluation of IT infrastructure for purposes of optimization.[25]

62.   Claim 7 is directed to a "method for validating an existing virtualized environment comprising a plurality of virtual machines placed on one or more virtual hosts." It recites "obtaining a data set for each of said plurality of virtual machines, each data set comprising information pertaining to technical, business, and workload constraints." Claim 7's method also involves "evaluating each virtual guest against each virtual host and other virtual guest using one or more rule sets pertaining to said technical, business, and workload constraints to determine guest-host placements." Claim 7 further recites "identifying the existence of virtual machines with suboptimal placements to enable alternative placements for said virtual machines."

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[23]   '687 patent, 5:52-6:4.

[24]   '687 patent, 38:64-39:2.

[25]   For example, VMware has acknowledged that its prior versions "did not support affinity between VMs and hosts," but as it described in an article about "lessons learned," it added that feature, which is covered by the '687 patent. Gulati, et al., VMware Distributed Resource Management: Design,   Implementation,   and   Lessons   Learned,   available   at https://labs.vmware.com/vmtj/vmware-distributed-resource-management-design-implementation-and-lessons-learned (Ex. 13).

63.   The VMware Accused Products directly infringe claim 7. For example, vROps

infringes claim 7 when it conducts "Capacity Optimization," "Workload Optimization," including

the newly added host-based placement feature, "What-If Analyses," and the installation of vROps.

When these features are executed, vROps validates an existing virtualized environment by

evaluating each virtual guest with each virtual host and other virtual guests by using a constraint-

based analysis (e.g., technical, workload, and business constraints) and identifies virtual machines

in the virtualized environment that are not optimally placed.

64.   vROps utilizes a method for validating an existing virtual environment comprising

a plurality of virtual machines placed on one or more hosts. For example, vROps validates virtual

environments comprising of virtual machines and hosts as it conducts "continuous performance

optimization . . . driven by business and operational intent . . . ."[26] vROps validates and manages

virtualized environments by automating and simplifying "IT operations management" and by

providing "unified visibility from applications to infrastructure across physical, virtual, and cloud

environments."[27]   Generally, vROps assesses the placements of virtual machines on hosts using

multiple criteria, and therefore, vROps is capable of validating whether an environment in is an

optimized state. It validates an existing virtualized environment that includes VMs and hosts, as

shown in the video below:[28]

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[26]   Self-Driving Operations by VMware vRealize Operations, Datasheet at 1, available at https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/products/vCenter/vmware-vrealize-operations-datasheet.pdf (Ex. 14 (highlighting added)).

[27]   *Id*. (Self-Driving Operations by VMware vRealize Operations Datasheet at 1, Ex. 14 (highlighting added)).

[28]   Screenshot from VMware Video, VMware vRealize Operations, Workload Optimization – Overview, available at https://www.youtube.com/watch?v=w7Y4uEayltM&feature=youtu.be (Ex. 15). A full version of the video from which the screenshot (Ex. 15) was taken has been provided as Ex. 35.

Workload Optimization Overview
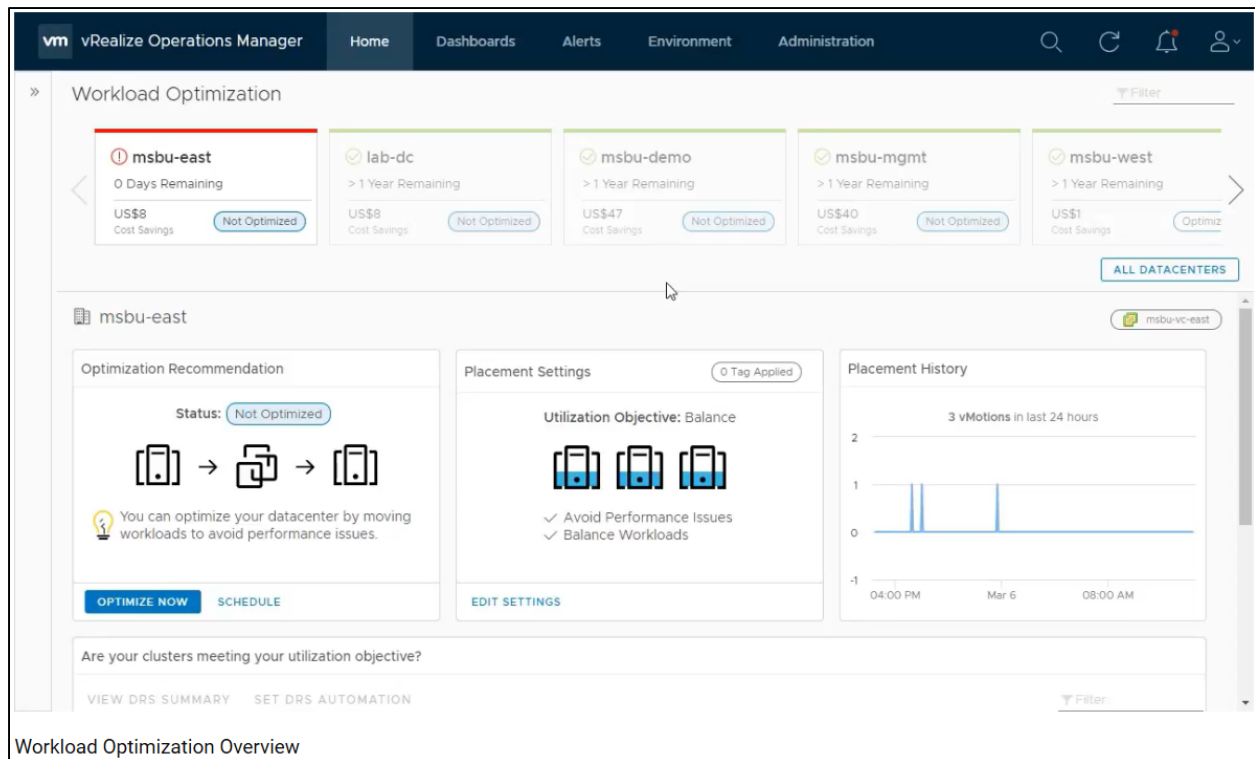
65.   vROps also obtains a data set for each of said plurality of virtual machines, each data set comprising information pertaining to technical, business, and workload constraints. For example, vROps obtains "performance data from monitored software and hardware resources in your enterprise and provides predictive analysis and real-time information about problems."[29] It "monitors your ESXi hosts and the virtual machines located on them," and "monitors virtual machines running in a vCenter Server, analyzes longer-term historical data, and provides forecast data about predictable patterns of resource usage to Predictive DRS. Based on these predictable patterns, Predictive DRS moves to balance resource usage among virtual machines."[30] Predictive DRS is a feature included in vROps. It also computes "analytics [that] provide precise tracking,

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[29]   *Supra* n. 8 (vRealize Operations Manager 7.0 Help Guide at 486, Ex. 5).
[30]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 120, Ex. 5).

measuring, and forecasting of data center capacity, usage, and trends to help manage and optimize resource use, system tuning, and cost recovery."[31]

66.   Examples   of   technical   (e.g.,   configuration)   and   workload   (e.g., utilization/performance) data vROps uses can be found illustrated in the various components of the interface shown below.[32] Further, for technical constraints: "The VM dashboard focuses on highlighting the key configurations of the virtual machines in your environment. You can use this dashboard to find inconsistencies in configuration within your virtual machines and take quick remedial measures."[33] And vROps can "[use] the Workload Utilization widget to identify which workload objects are underutilized and overutilized."[34]

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[31]   *Supra* n. 8 (vRealize Operations Manager 7.0 Help Guide at 770, Ex. 5).

[32]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 684, Ex. 5).
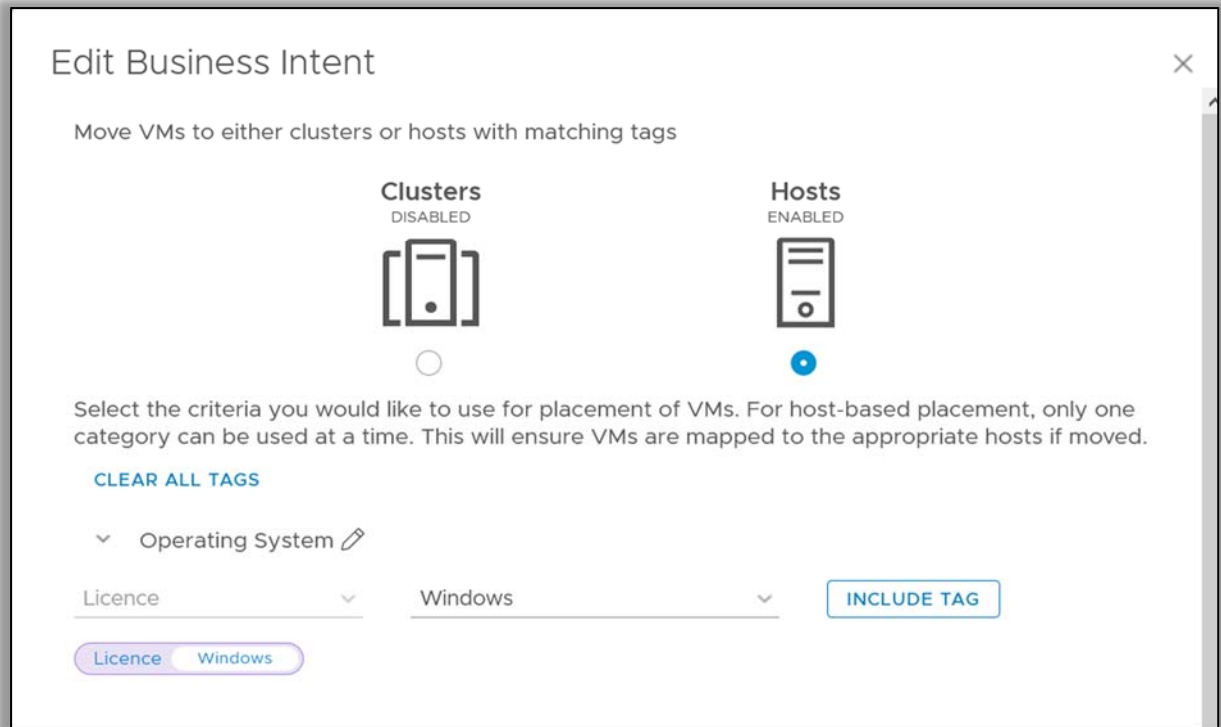
[33]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 496, Ex. 5).

[34]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 485, Ex. 5).
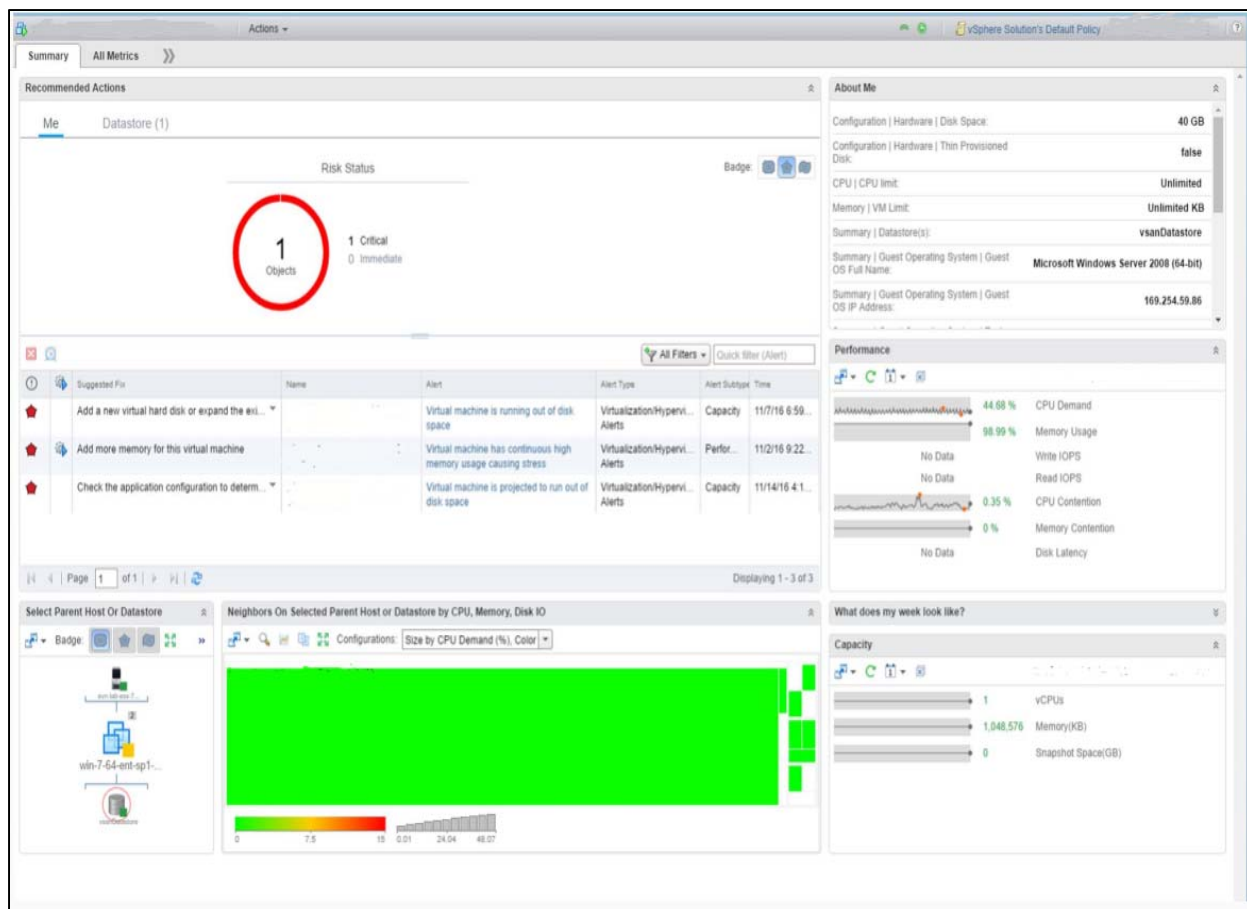
67.   Further, vROps uses business constraints corresponding to VMs as shown below:[35]

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[35]   *Supra* n. 17 (Dias, Ex. 10).

68.   Further, for business constraints: "You can use vCenter Server tagging to tag VMs, hosts, and/or clusters with specific tags. vRealize Operations Manager can be configured to leverage tags to define business-related placement constraints: VMs can only be placed on hosts/clusters with matching tags."[36]

69.   vROps also evaluates the placement of said virtual machines in said virtualized environment using said data sets by evaluating each virtual guest against each virtual host and other virtual guests using one or more rule sets pertaining to said technical, business and workload constraints to determine guest-host placements. For example, as depicted above, vROps evaluates placements of virtual machines when conducting "Workload Optimization."   vROps "monitors virtual objects and collects and analyzes related data that is presented to users in graphical form at the Workload Optimization screen. Depending on what appears on the screen, you might use

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[36]   *Supra n.* 8 (vRealize Operations Manager 7.0 Help Guide at 631, Ex. 5).

optimization functions to distribute a workload differently in a data center or customer data center. Or you may decide to perform more research, including checking the Alerts page to determine if any alerts have been generated for objects or interest."[37] It "provides for moving virtual compute resources and their file systems dynamically across datastore clusters within a data center or custom data center. Using Workload Optimization, you can rebalance virtual machines and storage across clusters, relieving demand on an overloaded individual cluster and maintaining or improving cluster performance. You can also set your automated rebalancing policies to emphasize VM consolidation, which potentially frees up hosts and reduces resource demand."[38]

70.   In addition, vROps' "Workload Optimization offers you the potential to automate fully a significant portion of your cluster workload rebalancing tasks" by, among other things, tagging virtual machines for "Host-Based Virtual Machine Placement" and "Tag-Based VM Placement in Clusters."[39] "[W]hen the system runs an optimization, it uses VM-to-host tag matching to ensure that VMs are moved to - or stay with – the appropriate host."[40] vROps uses "host-based VM placement to tie your VMs more closely to your infrastructure. By using vCenter Server to tag hosts and VMs with specific tags, you make certain that when the system runs an optimization, it uses VM-to-host tag matching to ensure that VMs are moved to – or stay with – the appropriate host."[41] Accordingly, vROps evaluates each virtual guest against each virtual host and other virtual guests when optimizing the workload across clusters and hosts.

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[37]   *Supra* n. 8 (vRealize Operations Manager 7.0 Help Guide at 633, Ex. 5).

[38]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 625, Ex. 5).

[39]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 626, Ex. 5).

[40]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 630, Ex. 5).

[41]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 630, Ex. 5).

71.   Lastly, vROps identifies the existence of virtual machines with suboptimal placements to enable alternative placements for virtual machines. vROps meets this limitation when it conducts workload optimization, which identifies sub-optimal VM placements.

72.   Based on the above, the VMware Accused Products directly infringe at least, but not limited to, claim 7 of the '687 patent.

2.   The '367 Patent

73.   On May 16, 2017, the U.S. Patent and Trademark Office duly and legally issued the '367 patent, entitled "System and Method for Determining and Visualizing Efficiencies and Risks in Computing Environments," with Andrew Derek Hillier as inventor. The earliest application related to the '367 patent was filed on August 16, 2011. A true and correct copy of the '367 patent is attached as Exhibit 16.

74.   The '367 patent is directed to technological solutions with practical applications that address problems specifically grounded in enterprise IT environments. For example, the '367 patent explains that "[m]odern data centers typically comprise hundreds if not thousands of servers. Each server supplies a finite amount of resource capacity, typically in the form of, but not limited to: central processing unit (CPU) capacity, memory or storage capacity, disk input/output (I/O) throughput, and network I/O bandwidth. Workloads running on these servers consume varying amounts of these resources. With the advent of virtualization and cloud technologies, individual servers are able to host multiple workloads."[42]

75.   The '367 patent further explains that "[p]ercent CPU utilization, which corresponds to the ratio of CPU usage relative to CPU capacity, is a common measure of how effectively servers are being utilized. Various other metrics may be used to determine resource utilization for

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[42]   '367 patent, 1:23-31.

computing systems. Organizations may wish to measure and evaluate efficiencies and risks in computing environments but often do not have convenient ways to perform such measurements and evaluations."[43]

76.   The '367 patent addresses these technological problems by not only a mere nominal application of a generic computer to practice the invention, but by requiring the computations of "at least one score quantifying efficiencies and/or risks associated . . . based on the resource utilization or performance data, the capacity data, and the at least one operational policy."[44] The '367 patent also requires the "displaying an indicator for at least one of the plurality of computing entities in a graphical representation based on the corresponding score."[45] Such scores and indicators provide for a convenient and efficient way for IT organization to determine resource optimization for computing systems.

77.   This notion was explained during the prosecution of the underlying patent application: "the technical problem is solved by the present invention by computing efficiency scores for computing entities based on resource utilization data, resource capacity data, and operational policies relating to resource allocation. These scores thus reflect conditions prevailing in an apparatus or system – in particular conditions as to the utilization and availability of resources (such as CPU/memory capacity) – and these conditions are visually indicated by generating a graphical display with an indicator for at least one computing entity."[46] As such, the '367 patent is directed to a novel way to measure, evaluate, and visualize efficiencies and risks in an IT

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[43]   '367 patent, 1:32-39.

[44]   '367 patent, 1:49-52.

[45]   '367 patent, 11:25-27.

[46]   U.S. Patent Application No. 14/180,438, Apr. 22, 2016 Response to Office Action (Ex. 17).

infrastructure, resulting in a specific improvement over prior systems that is not well-known or conventional.

78.   Claim 1 of the '367 patent is directed to a "method performed by a processor in a computing system." vROps is performed by a processor in a computing system. Claim 1 further recites "obtaining resource utilization or performance data pertaining to a plurality of computing entities in a computing environment, and capacity data specifying resource capacities for the plurality of computing entities in the computing environment" and "obtaining at least one operational policy defining criteria to determine whether the utilization or performance of an entity is in an acceptable range relative to its capacity or performance limits." Claim 1's method also recites "computing at least one score quantifying efficiencies and/or risks associated with corresponding ones of the entities in the computing environment, based on the resource utilization or performance data, the capacity data, and the at least one operational policy."

79.   Claim 1 further involves "displaying an indicator for at least one of the plurality of computing entities in a graphical representation based on the corresponding score," "wherein each indicator is positioned in the graphical representation according to the corresponding score such that the positioned indicator shows in a spatial manner, relative efficiencies and/or risks for the corresponding entity by positioning the indicator in one of a first portion indicative of risk associated with having infrastructure in the computing environment that cannot service workload demands and meet criteria specified in the at least one operational policy, a second portion indicative of an amount of infrastructure in the computing environment that can service workload demands based on the at least one operational policy, or a third portion indicative of inefficiencies associated with having more than the required amount of infrastructure in the computing environment to service workload demands based on the at least one operational policy."

80.   Figure 4 of the '367 patent is instructive because it is representative of an embodiment of the claimed invention and because vROps has an identical feature as depicted below:

FIG. 4
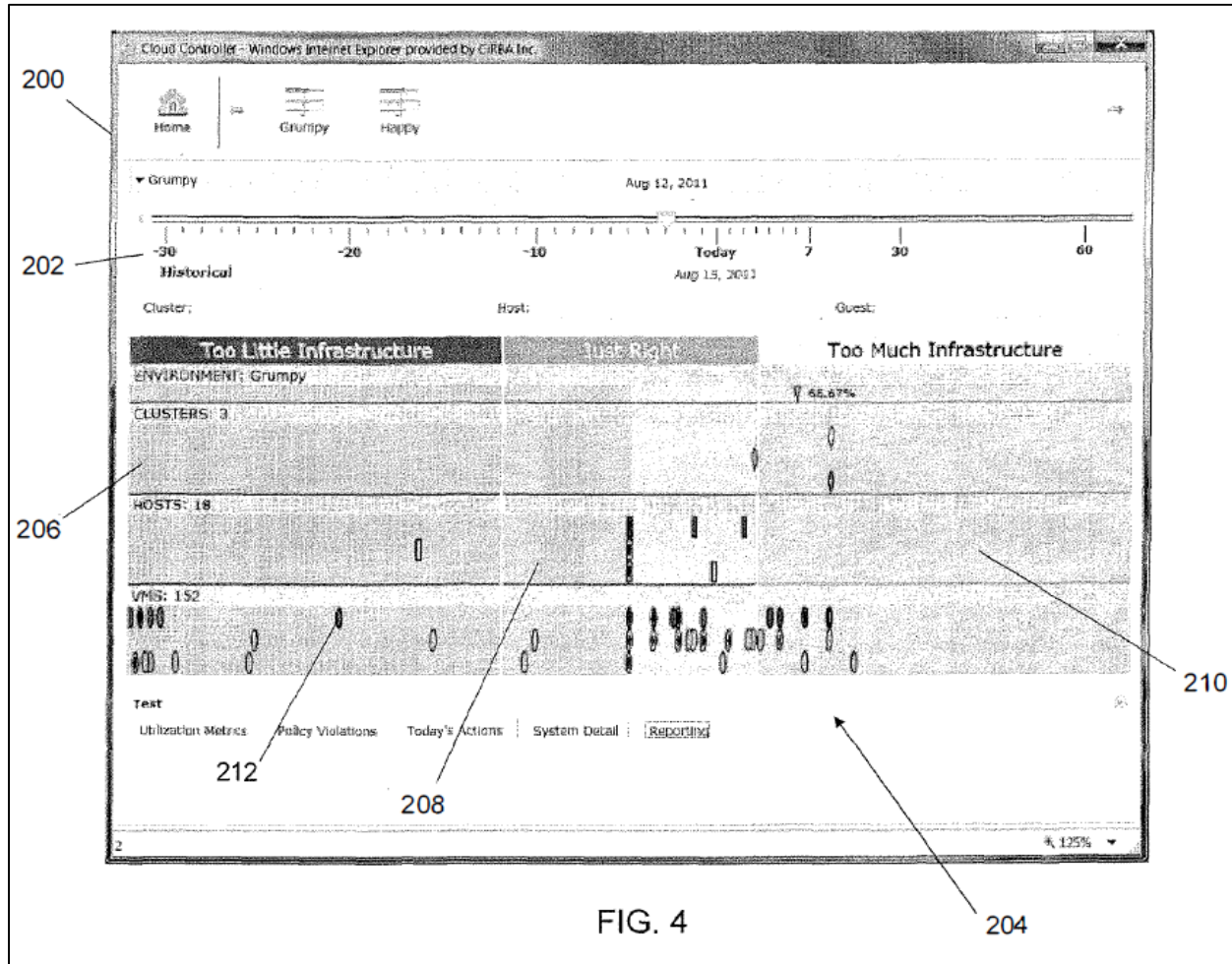
'367 patent, Figure 4

81.   As illustrated above[47] and explained in detail below, the VMware Accused Products directly infringe at least claim 1 of the '367 patent.

82.   vROps obtains resource utilization or performance data pertaining to a plurality of computing entities in a computing environment, and capacity data specifying resource capacities for the plurality of computing entities in the computing environment. For example, vROps' "analytics provide precise tracking, measuring and forecasting of data center capacity, usage, and trends to help manage and optimize resource use, system tuning, and cost recovery. The system monitors stress thresholds and alerts you before potential issues can affect performance. Multiple pre-set reports are available. You can plan capacity based on historical usage and run what-if scenarios as your requirements expand."[48] vROps also "use[s] the Capacity Optimization and

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[47]   Overbeek, D., vRealize Operations 6.2: Intelligent Workload Placement with DRS, VMware Blogs, available at https://blogs.vmware.com/management/2016/02/vrealize-operations-6-2-intelligent-workload-placement-with-drs-2.html (Ex. 18).

[48]   *Supra* n. 8 (vRealize Operations Manager 7.0 Help Guide at 770, Ex. 5).

Reclaim features to assess workload status and resource contention in data centers across your environment. You can determine time remaining until cpu, memory, or storage resources run out and realize cost savings when underutilized VMs can be reclaimed and deployed where needed."[49]

83.   vROps likewise obtains performance data from monitored software and hardware resources in your enterprise and provides predictive analysis and real-time information about problems.[50]   It "monitors your ESXi hosts and the virtual machines located on them," and "monitors virtual machines running in a vCenter Server, analyzes longer-term historical data, and provides forecast data about predictable patterns of resource usage to Predictive DRS. Based on these predictable patterns, Predictive DRS moves to balance resource usage among virtual machines."[51]

84.   Next, vROps obtains at least one operational policy defining criteria to determine whether the utilization or performance of an entity is in an acceptable range relative to its capacity or performance limits. For example, in vROps "[a]dministrators assign policies to object groups and applications to support Service Level Agreements (SLAs) and business priorities. When you use policies with object groups, you ensure that the rules defined in the policies are quickly put into effect for the objects in your environment."[52] As a further example, vROps "[u]se host-based VM placement to tie your VMs more closely to your infrastructure. By using vCenter Server to tag hosts and VM with specific tags, you make certain that when the system runs an optimization,

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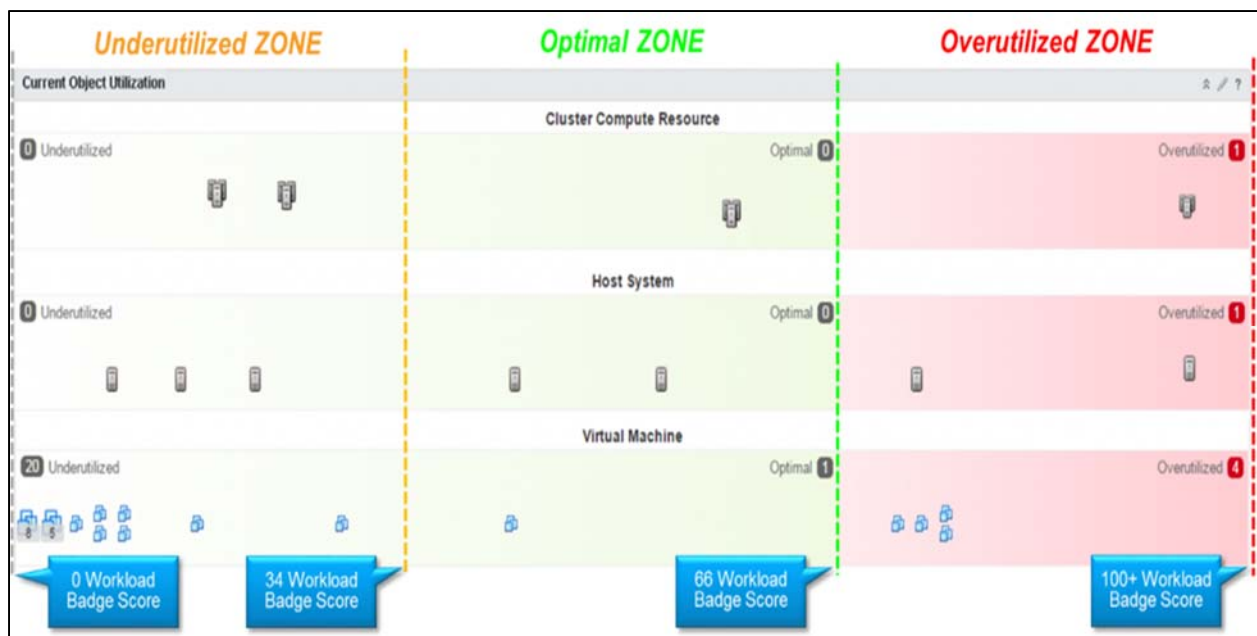[49]   *Supra* n. 8 (vRealize Operations Manager 7.0 Help Guide at 770, Ex. 5).

[50]   *Id.* (vRealize Operations Manager 7.0 Help Guide at 486, Ex. 5).

[51]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 120, Ex. 5).

[52]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 304, Ex. 5).

it used VM-to-host tag matching to ensure that VMs are moved to – or -stay with – the appropriate host."[53]

85.   Further, vROps computes at least one score quantifying efficiencies and/or risks associated with corresponding ones of the entities in the computing environment, based on the resource utilization or performance data, the capacity data, and the at least one operational policy. For example, vROps provides "the efficiency widget that is the status of the efficiency-related alerts for the objects it is configured to monitor. Efficiency alerts in vRealize Operations Manager usually indicate that you can reclaim resources. You can create one or more efficiency widgets for objects that you add to your custom dashboards."[54] In addition, scores "quantifying efficiencies and/or risks" can be observed in the vROps dashboard below.[55]

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[53]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 630, Ex. 5).

[54]   *Id*. (vRealize Operations Manager 7.0 Help Guide at 408, Ex. 5).

[55]   *Supra* n. 47 (Overbeek, vRealize Operations 6.2: Intelligent Workload Placement with DRS, Ex. 18).

86.   Lastly, vROps displays an indicator for at least one of the plurality of computing entities in a graphical representation based on the corresponding score, wherein each indicator is positioned in the graphical representation according to the corresponding score such that the positioned indicator shows in a spatial manner, relative efficiencies and/or risks for the corresponding entity by positioning the indicator in one of a first portion indicative of risk associated with having infrastructure in the computing environment that cannot service workload demands and meet criteria specified in the at least one operational policy, a second portion indicative of an amount of infrastructure in the computing environment that can service workload demands based on the at least one operational policy, or a third portion indicative of inefficiencies associated with having more than the required amount of infrastructure in the computing environment to service workload demands based on the at least one operational policy."

87.   For example, the "first portion" is depicted in the illustration of vROps above by "overutilized ZONE," the "second portion" is depicted by "optimal ZONE," and the "third portion" is depicted the "underutilized ZONE."

88.   Based on the above, the VMware Accused Products directly infringe at least, but not limited to, claim 1 of the '367 patent.

F.   **VMware's Infringement Has Injured Densify**

89.   VMware's use of infringing technology has increased over the years, culminating in its recent release of vROps 7.0 and now the new release of vROps 7.5. And VMware shows no signs of stopping. VMware has even more recently indicated its intent to move into the native and hybrid cloud environments. In its marketing materials, VMware is touting enhancements related to cloud migration as one of the biggest feature enhancements in the recent vROps 7.5 release. And, in these materials, VMware emphasizes that vROps can manage workloads in VMware

Cloud on AWS. With its launch of vROps 7.0 and vROps 7.5, VMware's products are now workable and attractive to these customers because they incorporate Densify's patented technology.

90.   Upon information and belief, VMware is offering steep discounts (e.g., single, one-time, and bundled discounts) to subscribe to vROps 7.0. By doing so, VMware is foreclosing the infrastructure optimization market.   Although Densify has been competitive with VMware, customers have used Densify alongside VMware's management tools like DRS and vROps. On information and belief, VMware is telling customers that there is no need for them to have Densify now that VMware has its new functionality – functionality that infringes Densify's patents. As such, Densify cannot compete effectively when its patents are infringed. Once customers are lost and market share diminished, the barrier to entry would be insurmountable for Densify to compete again in the same market space.

91.   Accordingly, Densify has brought this action to stop VMware from using copied technology to take customers from Densify.

CLAIM I

VMWARE'S INFRINGEMENT OF THE '687 PATENT

92.   Densify incorporates by reference the foregoing paragraphs of this Complaint as if fully set forth herein.

93.   VMware has infringed and continues to infringe the '687 Patent. VMware directly infringes the '687 patent under 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing in this District and into the United States products and/or methods covered by one or more claims of the '687 patent, including, but not limited to, the VMware Accused Products. As an example, the VMware Accused Products infringe at least claim 7 of the '687 patent.

94.   VMware also indirectly infringes the '687 patent by inducing others to infringe and/or contributing to the infringement of others, including third party users of the VMware Accused Products in this District and elsewhere in the United States.

95.   Specifically, on information and belief, VMware has had knowledge of its infringement of the '687 patent since at least the time of service of this Complaint and before the time of service of the Complaint, including for the reasons that, for example: Densify's products were well-known and publicized; Densify has received press coverage (including at VMworld) of its pioneering technological developments in virtual infrastructure optimization; Densify has marketed its products with notices regarding the '687 patent; former Densify customer representatives and industry analysts that were intimately familiar with Densify and its products are now at VMware; and Densify and VMware are competitors in the same industry, giving VMware reason to investigate Densify's patents on the technologies. To the extent that VMware lacked knowledge of its infringement of the '687 patent before the time of service of this Complaint, it remained willfully blind by affirmatively avoiding investigating Densify's patents or inspecting Densify's website.

96.   Upon information and belief, Densify alleges that VMware has actively induced the infringement of the '687 patent under 35 U.S.C. § 271(b) by actively inducing the infringing use of the VMware Accused Products by third parties in the United States. Densify is informed and believes, and thereon alleges, that these third parties infringe the '687 patent in violation of 35 U.S.C. § 271(a) by using the VMware Accused Products.

97.   VMware actively induces others, including customers, administrators, and operators, to infringe by, among other activities, providing instructions, training, and support for

the use of the VMware Accused Products through websites, technical documents and manuals, tutorials, and support services.

98.   For example, VMware provides websites and blogs that instructs customers or other third parties how to use the VMware Accused Products (e.g., https://blogs.vmware.com/management/2018/09/self-driving-all-the-way-to-the-host-oh-yeah-host-based-placement.html, Ex. 19).

99.   As another example, VMware provides customers and third parties with technical documents, like the vRealize Operations Manager Help Guide (e.g., https://docs.vmware.com/en/vRealize-Operations-Manager/7.0/vrealize-operations-manager-70-help.pdf, Ex. 5), that teach customers, administrators, and other third parties how to use the VMware Accused Products in an infringing manner.

100.   Further, VMware hosts industry events (e.g., VMworld), local seminars, as well as live and on-demand webcasts and webinars to teach customers and third parties how to use the VMware Accused Products.[56] Specifically, such events provide for sessions that teach and show step-by-step how the customers can use, configure, manage, operate, etc. their VMware Accused Products. Accordingly, VMware actively induces third parties to infringe the '687 patent.

101.   Upon information and belief, VMware contributorily infringes the '687 patent under 35 U.S.C. § 271(c) by importing, selling and/or offering to sell within the United States the VMware Accused Products (or components thereof) that constitute a material part of the claimed invention and are not staple articles of commerce suitable for substantial non-infringing use. For

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[56]   E.g., https://blogs.vmware.com/management/2018/08/vmworld-las-vegas-recommended-self-driving-operations-sessions.html (Ex. 20); Screenshot from HOL-1971-01-CMP - What's New in vRealize Operations Manager 7.0, VMware Hands-on Labs - Cloud Management Platform, available at https://labs.hol.vmware.com/HOL/catalogs/catalog/873 (Ex. 21).

example, when VMware provides vROps to its customers or other third parties, as part of a suite of software products, vROps constitutes a material component of the suite of software products that infringe or vROps is a material component used in practicing the '687 patent. vROps is especially adapted for use in an infringing manner without substantial non-infringing uses. And VMware has provided components of vROps, which constitute a material part of the claimed invention and are not staple articles of commerce suitable for substantial non-infringing use.

102.   In addition, VMware offers to sell and sells the VMware Accused Products to resellers who then incorporate the VMware Accused Products into infringing products which are used, sold, offered for sale, and or/or imported in the United States in an infringing manner. Accordingly, VMware contributorily infringes the '687 patent.

103.   Densify has no adequate remedy at law against VMware's acts of infringement, and unless VMware is enjoined from its infringement of the '687 patent, Densify will suffer irreparable harm.

104.   VMware, by way of its infringing activities, has caused and continues to cause Densify to suffer damages, the exact amount to be determined at trial. The damages include lost profits and/or reasonable royalty damages based on VMware's infringement. Densify's products have been marked with Densify's patents since at least or around March 2015.

105.   Densify is further informed, and on this basis alleges, that VMware's infringement of the '687 patent has been and continues to be deliberate and willful, and, therefore, this is an exceptional case warranting an award of enhanced damages for up to three times the actual damages awarded and attorney's fees to Densify pursuant to 35 U.S.C. §§ 284-285. As noted above, VMware has had knowledge of the '687 patent and its infringement thereof, and yet has deliberately continued to infringe in a wanton, malicious, and egregious manner, with reckless

disregard for Densify's patent rights. Thus, VMware's infringing activities have been and continue to be consciously wrongful.

CLAIM II

VMWARE'S INFRINGEMENT OF THE '367 PATENT

106.   Densify incorporates by reference the foregoing paragraphs of this Complaint as if fully set forth herein.

107.   VMware has infringed and continues to infringe the '367 Patent. VMware directly infringes the '367 patent under 35 U.S.C. §271(a) by making, using, selling, offering for sale, and/or importing in this District and into the United States products and/or methods covered by one or more claims of the '367 patent, including, but not limited to, the VMware Accused Products. As an example, the VMware Accused Products infringe at least claim 1 of the '367 patent.

108.   VMware also indirectly infringes the '367 patent by inducing others to infringe and/or contributing to the infringement of others, including third party users of the VMware Accused Products in this District and elsewhere in the United States.

109.   Specifically, on information and belief, VMware has had knowledge of its infringement of the '367 patent since at least the time of service of this Complaint and before the time of service of the Complaint, including for the reasons that, for example: Densify's products were well-known and publicized; Densify has received press coverage (including at VMworld) of its pioneering technological developments in virtual infrastructure optimization; Densify has marketed its products with notices regarding the '367 patent; former Densify customer representatives and industry analysts that were intimately familiar with Densify and its products are now at VMware; and Densify and VMware are competitors in the same industry, giving VMware reason to investigate Densify's patents on the technologies. To the extent that VMware lacked knowledge of its infringement of the '367 patent before the time of service of this

Complaint, it remained willfully blind by affirmatively avoiding investigating Densify's patents or inspecting Densify's website.

110. Upon information and belief, Densify alleges that VMware has actively induced the infringement of the '367 patent under 35 U.S.C. § 271(b) by actively inducing the infringing use of the VMware Accused Products by third party users in the United States. VMware actively induces others, including customers, administrators, and operators, to infringe by, among other activities, providing instructions, training, and support for the use of the VMware Accused Products through websites, technical documents and manuals, tutorials, and support services. Acts of inducement are set forth in Paragraphs 98-102.

111. Upon information and belief, VMware contributorily infringes the '367 patent under 35 U.S.C. § 271(c) by importing, selling and/or offering to sell within the United States the VMware Accused Products (or components thereof) that constitute a material part of the claimed invention and are not staple articles of commerce suitable for substantial non-infringing use. For example, VMware has provided components of vROps, which constitute a material part of the claimed invention and are not staple articles of commerce suitable for substantial non-infringing use. Accordingly, VMware contributorily infringes the '367 patent.

112. In addition, VMware offers to sell and sells the Accused Products to resellers who then incorporate the VMware Accused Products into infringing products which are used, sold, offered for sale, and or/or imported in the United States in an infringing manner. Accordingly, VMware contributorily infringes the '367 patent.

113. Densify has no adequate remedy at law against VMware's acts of infringement, and unless, VMware is enjoined from its infringement of the '367 patent, Densify will suffer irreparable harm.

114.   VMware, by way of its infringing activities, has caused and continues to cause Densify to suffer damages, the exact amount to be determined at trial. The damages include lost profits and/or reasonable royalty damages based on VMware's infringement. Densify's products have been marked with Densify's patents since at least or around March 2015.

115.   Densify is further informed, and on this basis alleges, that VMware's infringement of the '367 patent has been and continues to be deliberate and willful, and, therefore, this is an exceptional case warranting an award of enhanced damages for up to three times the actual damages awarded and attorney's fees to Densify pursuant to 35 U.S.C. §§ 284-285. As noted above, VMware has had knowledge of the '367 patent and its infringement thereof, and yet has deliberately continued to infringe in a wanton, malicious, and egregious manner, with reckless disregard for Densify's patent rights. Thus, VMware's infringing activities have been and continue to be consciously wrongful.

CLAIM III

UNFAIR COMPETITION IN VIOLATION OF

THE LANHAM ACT, 15 U.S.C. § 1125(a)

116.   Densify incorporates by reference the foregoing paragraphs of this Complaint as if fully set forth herein.

117.   Densify owns all right, title, and interest in and to the trademark and service marks including "DENSIFY," "DENSIFICATION," and "DENSIFYING" (collectively, the "Densify Marks"). Densify has used the marks in interstate commerce in connection with its goods and services since at least as early as 2015.

118.   Densify has invested and continues to invest substantial resources into promoting the Densify Marks. As a result, the Densify Marks have come to be associated exclusively with a single source, specifically, Densify's products and services. The Densify Marks have achieved

secondary meaning. They embody the substantial goodwill Densify has built in its company and

its well-regarded products. The Densify Marks are distinctive.

119.   The below picture shows Densify's use of its mark on the exterior of its offices in

Markham, Ontario.[57]

120.   The below picture shows Densify's use of its mark when it sponsored a NASCAR

at the Daytona 500.[58] Other examples of Densify's use of the Densify Marks are included as

Exhibits 24 – 25.[59]

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[57]   Photograph of Densify's exterior offices in Markham, Ontario (Ex. 22).

[58]   Twitter, @Densify, available at https://twitter.com/Densify/status/958020795648892934
(Ex. 23).

[59]   Densify, Densify Brand Resources, available at https://www.densify.com/company/brand
(Ex. 24); Densify, Dedicated Cloud & Infrastructure Experts at Your Service, available at
https://www.densify.com/service/expert-insight (Ex. 25).

121.   Upon information and belief, VMware was aware of Densify's use of the Densify Marks.

122.   On May 12, 2016, Densify launched its website, http://www.densify.com.   The launch of the website was accompanied by a press release.

123.   On June 28, 2017, Densify launched a branding project under the name "Densify." This rebranding included a press release as well as a substantial advertising campaign.   These materials were sent to customers and potential customers in Delaware.

124.   On August 14, 2018, Densify filed an application for trademark protection with the United States Patent and Trademark Office, with the serial number 88078131, for the mark "DENSIFY."   That application is currently pending.

125.   Upon information and belief, VMware has regularly and continuously infringed upon Densify's marks in connection with the sale, offering for sale, distribution, or advertising of its products and services, words and symbols that infringe upon Densify's trademarks and service marks.

126.   Upon information and belief, since at least 2018, VMware has infringed upon Densify's marks by using them in its sales materials, videos, presentations, and documentation. Examples of VMware's infringing use are included as Exhibits 14 and 26 – 30.[60]

127.   Upon information and belief, VMware uses the marks to increase the commercial value of its products and services by creating an association with Densify's award-winning optimization products and services. For example, VMware promotes its "Top Reasons to Upgrade vROps 7.0 and How to Get the Most Out of It" by using "densification" as shown in the red box in the figure below.[61]

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[60]   Jones, M., Upgrade to Self-Driving Operations at up to 65% off!, VMware Blogs, available at   https://blogs.vmware.com/management/2018/10/upgrade-to-self-driving-operations-at-up-to-65-off.html (Ex. 26 at 2 (highlighting added));

Supra n. 26 (Self-Driving Operations by VMware vRealize Operations, Datasheet at 1 (Ex. 14 (highlighting added)));

Overbeek, D., Cloud Management Platform (CMP) – Intelligent Provisioning and Optimization,   VMware   Blogs,   available   at https://blogs.vmware.com/management/2018/11/cloud-management-platform-cmp-intelligent-provisioning-and-optimization.html (Ex. 27 at 1 (highlighting added));

Overbeek, D., Start Running a Self-Driving Datacenter – vRealize Operations 7.0 Workload   Optimization!,   VMware   Blogs,   available   at https://blogs.vmware.com/management/2018/09/start-running-a-self-driving-datacenter-vrealize-operations-7-0-workload-optimization.html (Ex. 28 at 2 (highlighting added));

Screenshot from VMware EMEA, Top Reasons to Upgrade to vROps 7.0 and How to Get the Most Out of It, available at https://www.youtube.com/watch?v=1KRRuntV4aM (Ex. 29 (highlighting added)). A full version of the video from which the screenshot (Ex. 29) was taken has been provided as Ex. 36;

Screenshot from Workload Optimization - Densifying to Repurpose Hosts, VMware Cloud Management, available at https://www.youtube.com/watch?v=IymKQdg3oNE (Ex. 30). A full version of the video from which the screenshot (Ex. 30) was taken has been provided as Ex. 34.

[61]   _Supra_ n. 60 (Screenshot from VMware EMEA, Ex. 29 (highlighting added)).

128.   Upon information and belief, VMware's use of Densify's marks is likely to create

confusion. Both VMware and Densify sell services within the same market and most of Densify's

customers are also VMware users.

129.   Upon information and belief, VMware has customers within the state of Delaware,

and regularly solicits further business within the state of Delaware. Upon information and belief,

it uses materials that infringe upon Densify's trade and service marks within the state of Delaware

and in interstate commerce.

130.   Upon information and belief, Densify has been harmed by, and will continue to be

harmed by, VMware's infringing conduct. VMware's actions have caused monetary damages to

Densify, by creating confusion in the minds of consumers as to what products and services they

were being sold, and by depriving Densify of the full value of the Densify Marks. VMware's use

of the Densify Marks has damaged the goodwill associated with those marks.

131.   Upon information and belief, VMware's infringing conduct causes Densify irreparable harm, including, but not limited to, depriving Densify of its rights in the Densify Marks, creating a likelihood of confusion, mistake, or deception within its industry, causing a false association in the minds of its consumers between Densify and VMware, and incalculable loss of goodwill.

132.   VMware's use of the Densify Marks violates the Lanham Act, 15 U.S.C. § 1125(a).

133.   VMware's violation of § 1125(a) was deliberate, willful, and intended to cause confusion, mistake, or deception in violation of 15 U.S.C. § 1125.

134.   As a result of VMware's acts, Densify is entitled to recover VMware's profits, its own damages, the costs of this action, and enhanced damages.

CLAIM IV

DECEPTIVE TRADE PRACTICES UNDER DELAWARE LAW

135.   Densify incorporates by reference the foregoing paragraphs of this Complaint as if fully set forth herein.

136.   Densify has common law rights in the state of Delaware and elsewhere to the Densify Marks.

137.   VMware has used the Densify Marks or facsimiles thereof to create a likelihood of customer confusion that VMware's products use Densify's products and services, are associated with Densify or its products or services, or are substantially the same as Densify's products and services.

138.   VMware has passed off its goods and services as those of Densify or otherwise caused a likelihood of confusion or misunderstanding as to the "the source, sponsorship, approval .

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. . [or] affiliation, connection, association with, or certification by" between its products and services and Densify's products and services in violation of Delaware Code Title 6 § 2532(1)-(3).

139.   VMware further "[r]epresents that [its] goods or services have sponsorship, approval, characteristics . . . that they do not have," namely the sponsorship, approval, or characteristics of Densify and its products or services, in violation of Delaware Code Title 6 § 2532(5).

140.   These infringements by VMware add to the commercial value of its products and services.

141.   Densify has suffered monetary harm as a result of VMware's conduct.

142.   VMware's conduct, in both its violations of Delaware's trademark protections and the federal Lanham Act, constitutes a "deceptive trade practice" within the meaning of Delaware Code Title 6 § 2532.

143.   VMware's acts constitute an exceptional case and have been committed willfully. Accordingly, Densify is entitled to reasonable attorneys' fees under Delaware Code Title 6 § 2533(b).

144.   Densify is entitled to damages and injunctive relief under Delaware law. Both Densify and the public will suffer irreparable harm if VMware is permitted to continue its infringement. Therefore, Densify is entitled to injunctive relief that requires VMware to cease use of any and all Densify trade and service marks. VMware's willful actions constitute an exceptional case, and Densify is therefore entitled to its reasonable attorneys' fees and such other relief as is provided by law.

CLAIM V

COMMON LAW TRADEMARK INFRINGEMENT

145.   Densify incorporates by reference the foregoing paragraphs of this Complaint as if fully set forth herein.

146.   Densify has valid and protectable common law rights in the Densify Marks.

147.   Densify is the senior user of the Densify Marks.

148.   VMware's conduct constituted infringement of Densify's common law rights in the Densify Marks.

149.   VMware's use of the Densify Marks on unauthorized products and services is likely to cause confusion as to source, sponsorship, affiliation, or origin of VMware's products and services.

150.   VMware's use of the Densify Marks is likely to deceive others as to the relationship between VMware and Densify.

151.   VMware's wrongful acts of infringement have permitted, continue to permit, and will permit VMware to earn substantial profits on the basis of Densify's reputation and goodwill embodied in the marks.

152.   As a direct and proximate result of VMware's wrongful acts of infringement, Densify has been, continues to be, and will be harmed.

153.   Densify is entitled to damages and injunctive relief under Delaware law. Both Densify and the public will suffer irreparable harm if VMware is permitted to continue its infringement. Therefore, Densify is entitled to injunctive relief that requires VMware to cease use of the Densify Marks.

PRAYER FOR RELIEF

154.   WHEREFORE, Densify prays for judgment as follows:

a)   That VMware has infringed, and unless enjoined will continue to infringe, each of the Asserted Patents;

b)   That VMware has willfully infringed each of the Asserted Patents;

c)   That VMware, its officers, agents, servants, and employees, and those persons in active concert or participation with any of them, be preliminarily, and thereafter permanently, enjoined from commercially manufacturing, using, offering for sale, selling, or importing the VMware Accused Products or any other product that infringes, or induces or contributes to the infringement of the Asserted Patents, prior to the expiration date of the last to expire of those patents;

d)   That Densify be awarded monetary relief sufficient to compensate Densify for damages resulting from VMware's infringement of the Asserted Patents, including lost profits and/or a reasonable royalty under 35 U.S.C. § 284, and that such monetary relief be awarded to Densify with prejudgment and post-judgment interest;

e)   That Densify be awarded enhanced damages, up to and including trebling of the damages awarded to Densify;

f)   That Densify be awarded the attorneys' fees, costs, and expenses that it incurs prosecuting this action under 35 U.S.C. § 285;

g)   Damages, VMware's profits, and the costs of this action under 15 U.S.C. § 1117;

h)   Injunctive relief that requires VMware to cease use of the Densify Marks; and

i)   That Densify be awarded such other and further relief as this Court deems just and proper.

DEMAND FOR JURY TRIAL

155.   Densify demands a trial by jury of any and all issues triable of right before a jury.

Dated: April 25, 2019

Respectfully submitted,

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